30. The transceiver of claim 23 wherein the receiver input comprises a differential transistor pair each having a gate coupled to a different one of the differential lines.

31. The transceiver of claim 30 wherein the transmitter output comprises a second differential transistor pair each having a drain coupled to a different one of the differential lines.

REMARKS

In the Final Action dated September 10, 2002 and the Advisory Action dated December 4, 2002, all of the claims (1 - 31) were rejected under 35 U.S.C. § 103. By this amendment and the accompanying Request for Continued Examination, applicants have amended claims 1, 13, 20 and 21 and respectfully traverse the rejection of claims 1 - 31 under 35 U.S.C. § 103.

Regarding independent claim 1, the cited references, considered either separately or in combination, do not teach or suggest a transceiver comprising a "transmitter output coupled to the first node of each of the at least one capacitor" and a "receiver input coupled to the second node of each of the at least one capacitor."

Regarding independent claim 13, the cited references, considered either separately or in combination, do not teach or suggest a method of coupling a transceiver to an antenna by "disabling the receiver input by powering off at least a portion of the receiver and transmitting a transmission signal from the transmitter output to the antenna with the receiver disabled" or "disabling the transmitter by powering off at least a portion of the transmitter and enabling the receiver by powering on at least a portion of the receiver; and receiving a receive signal from the antenna at the receiver with the transmitter disabled."

Regarding independent claim 20, the cited references, considered either separately or in combination, do not teach or suggest a

receiver comprising "matching means for matching impedance of the connected transmitter output and receiver input to impedance of the antenna."

Accordingly, applicants submit that independent claims 1, 13 and 20 and the claims that depend on them are not obvious over the cited art.

Response to Rejection of Claims 1-15, 17 and 19-31, 35 U.S.C.§ 103

Claims 1 - 15, 17, 19-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rucki et al. (US Patent No. 6,006,112) in view of Priniski et al. (US Patent No. 4,055,807). Claims 1, 13 and 20 are independent claims.

Claim 1

Regarding independent claim 1, the Office Action states in paragraph 2:

> Rucki et al discloses a transceiver (300 of figs. 3-4), comprising a transmitter (302 of figs. 3-4; col. 4, lines 8-17) having an output to couple a transmission signal (col. 4, lines 18-26) to an antenna (305 of figs. 3-4; col. 1, line 47-col. 2, line 63); and a receiver (307 of figs. 3-4) having an input responsive to a receive signal from the antenna (305 of figs. 3-4; col. 4, lines 27-67). However, Rucki et al does not specifically disclose a receiver input being directly connected to the transmitter output.
>
> On the other hand, Priniski et al, from the same field of endeavor, discloses a means for effectively switching an antenna between a receiver and transmitter, which means also provides a simple way to isolate the receiver from the transmitter when the system is in the transmit mode. The antenna switch is operable in either transmit or receive mode, for switching an antenna to either a transmitter or a receiver, respectively. Both the transmitter and receiver or operable in a selected frequency band. The switch comprises a filter having an input and an output; the filter input couples to the antenna, with the filter output coupling to the receiver (col. 2, line 4-66). Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to apply the antenna switch used in Priniski to the

> communication system of Rucki in order to match the connected transmitter output and receiver input to the antenna. (Underlining added.)

Applicants respectfully disagree with the contention that "apply[ing] the antenna switch used in Priniski to the communication system of Rucki" results in the claimed invention.

Claim 1 is directed to a transceiver comprising "transmitter output coupled to the first node of each of the at least one capacitor" and a "receiver input coupled to the second node of each of the at least one capacitor." Hence, there is no switch between the transmitter and the receiver in the claimed invention as there is in the asserted combination of Priniski et al. and Rucki et al.

Priniski et al. discloses the use of a switch between the transmitter and receiver, not a coupling via a capacitor or capacitors as claimed in claim 1. In Priniski et al., the input 42 to the receiver 44 connects to the node 40 while the output of the transmitter connects to the node 30. Located between the nodes 30 and 40 is, in effect, a high impedance switch 32 that is manually controlled by a switch 60. This is explained in the Priniski et al. specification beginning at column 2, line 64: "On activation to the transmit mode, push-to-talk switch 60 is suppressed whereby semiconductor diode 48 is forward biased to a low impedance state. Thus, the output port 40 of high pass filter 32 is coupled through capacitor 50 at or near the low impedance ground potential. This causes the capacitor 36 to resonate with inductor 38 whereby a high impedance is reflected to the input port 30 of the high pass filter 32."

Thus, Priniski et al.'s mechanism for preventing damage to the receiver when the transmitter is transmitting inherently involves driving the input of the receiver "at or near the low impedance ground potential" plus the bias across diode 48. Thus, in Priniski et al. a manually controlled switch circuit connects the receiver to the

transmitter and Priniski et al. prevents damage to the receiver by driving the input to the receiver low when transmitting.

In contrast, in the claimed invention the receiver input is coupled to the output of the transmitter via one or more capacitors. Applicant's claimed invention does not use a high impedance switch or drive the input to the receiver low.

In response to applicants' response dated May 13, 2002 the Final Action states at page 8:

> Applicant's representative argues that the receiver input in Priniski is not "directly connected to the transmitter output".
>
> Rucki et al. discloses a wireless base station that has a transmitter and a receiver. In the normal mode, the antenna is connected to the transmitter and receiver through the transmit and receive band-pass filters, respectively. The transmit and signal paths are effectively isolated from each other by serially-connected open switches. In the loopback mode, the transmitter output is connected to the receiver input as claimed (see Abstract, Figs. 3-5, col. 1, line 59-col. 2, line 48).

As with Priniski et al., Rucki et al.'s use of a switch between the transmitter and receiver does describe the invention claimed in claim 1.

In summary, the cited references considered either singularly or in combination do not teach or suggest the claimed invention. Accordingly, applicants respectfully submit that independent claim 1 and claims 2 - 12 depending on claim 1 are not obvious in view of Rucki et al. and Priniski et al.

Claim 13

Regarding independent claim 13, the Office Action states in paragraph 2:

> Rucki et al discloses a method of coupling a transceiver (300 of figs. 3-4) to an antenna (305 of figs. 3-4), the transceiver (300 of figs. 3-4; col. 4, lines 8-17) having a transmitter output (302 of figs. 3-4) and a

> receiver input (307 of figs. 3-4) connected directly together (col. 4, lines 18-26), the method comprising: Disabling (311 of figs. 3-4 such as S4) the receiver input; transmitting a transmission signal from the transmitter output (302 0f figs. 3-4) to the antenna (305 of figs. 3-4) with the receiver disabled (311 of figs. 3-4 such as S4; col. 4, lines 21-32); disabling (311 of figs. 3-4 such as S1-S4; col. 4, lines 34-41) the transmitter and enabling the receiver (col. 4, lines 42-67). However, Rucki et al does not specifically disclose the steps of disabling the transmitter and enabling the receiver; and receiving a receive signal from the antenna at the receiver with the transmitter disabled.
>
> On the other hand, Priniski et al, from the same field of endeavor, discloses a means for effectively switching an antenna between a receiver and transmitter, which means also provides a simple way to isolate the receiver from the transmitter when the system is in the transmit mode. The antenna switch is operable in either a transmit or a receive mode, for switching an antenna to either a transmitter or a receiver, respectively. Both the transmitter and receiver are operable in a selected frequency band. The switch comprises a filter having an input and an output; the filter input couples to the antenna, with the filter output coupling the receiver (col. 2, line 4-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the antenna switch used in Priniski to the communication system of Rucki in order to match the connected transmitter output and receiver input to the antenna. (Underlining added.)

Applicants respectfully disagree with the contention that "apply[ing] the antenna switch used in Priniski et al. to the communication system of Rucki" results in the claimed invention. Claim 13 is directed to a method of coupling a transceiver to an antenna with the "transceiver having a transmitter output and a receiver input connected directly together" and comprising "disabling the transmitter and enabling the receiver." Hence, there is no switch between the transmitter and the receiver in the claimed invention as there is in the asserted combination of Priniski et al. and Rucki et al.

In response to applicants' response dated May 13, 2002 the Final Action states at pages 8 - 9:

> Applicant's representative also argues that Priniski does not perform the step of "disabling the transmitter and enabling the receiver".
>
> However, Priniski discloses a means for effectively switching an antenna between a receiver and transmitter, which means also provides a simple way to isolate the receiver from the transmitter when the system is in the transmit mode (Fig. 1, col. 1, lines 31-57).
>
> Rucki also shows in Figures 4 and 5, a switching device which is configurable to connect the transmitter to the receiver during a testing mode of operation, permitting the receiver to receive signals from its own transmitter without passing through the external medium. This switching device is also configurable to connect the transmit band pass filter to the receiver during a scanning mode of operation, permitting the receiver to receive signals, in the first frequency band, from the external medium (col. 2, lines 30-57; col. 4, lines 42-67). It is considered that the transmitter is disabled and the receiver is enabled (vice versa).

Priniski et al. and Rucki et al. do not perform the operation of "disabling the receiver input by powering off at least a portion of the receiver and transmitting a transmission signal from the transmitter output to the antenna with the receiver disabled" or "disabling the transmitter by powering off at least a portion of the transmitter and enabling the receiver by powering on at least a portion of the receiver; and receiving a receive signal from the antenna at the receiver with the transmitter disabled" as claimed in claim 13.

As discussed above in conjunction with claim 1, Priniski et al and Rucki et al. use switches to selectively isolate the transmitters from the receivers. These isolating switches are necessary because the transmitters are still enabled and would, absent isolation, affect the operation of the receivers. Thus, the circuits disclosed in Priniski et al. and Rucki et al. merely isolate the transmitters and

receivers, they do not enable or disable them by powering them on or off.

In summary, the cited references considered either singularly or in combination do not teach or suggest the claimed invention. Accordingly, applicants respectfully submit that independent claim 13 and claims 14 - 19 depending on claim 13 are not obvious in view of Rucki et al. and Priniski et al.

Claim 20

Regarding independent claim 20, the Office Action states in paragraph 2:

> Regarding claim 20, Rucki et al discloses a transceiver (300 of figs. 3-4; col. 4, lines 8-17), comprising : a transmitter (302 of figs. 304) having an output to couple a transmission signal (col. 4, lines 18-26) to an antenna (305 of figs. 3-4; col. 1, line 47-col. 2, line 63); a receiver (307 of figs. 3-4) having an input responsive to a receive signal from the antenna (305 of figs. 3-4; col. 4, lines 14-32), the receiver input (307 of figs. 3-4) being directly connected to the transmitter output (302 of figs. 3-4; col. 4, lines 27-67). However, Rucki et al does not specifically disclose a matching means for matching the connected transmitter output and receiver input to the antenna.
>
> On the other hand, Priniski et al, from the same field of endeavor, discloses a means for effectively switching an antenna between a receiver and transmitter, which means also provides a simple way to isolate the receiver from the transmitter when the system is in the transmit mode. The antenna switch is operable in either a transmit or a receive mode, for switching an antenna to either a transmitter or a receiver, respectively. Both the transmitter and receiver are operable in a selected frequency band. The switch comprises a filter having an input and an output; the filter input couples to the antenna, with the filter output coupling to the receiver (col. 2, line 4-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the antenna switch used in Priniski to the communication system of Rucki in order to match the connected transmitter output and receiver input to the antenna.

As discussed above in conjunction with claim 1, the receiver inputs in Priniski et al. and Rucki et al. are not "directly connected to the transmitter output" as claimed in claim 20. Thus, the cited references to not teach or suggest the claimed invention.

Moreover, Priniski et al. does not teach "matching means for matching impedance of the connected transmitter output and receiver input to impedance of the antenna" as claimed in claim 20. The antenna switch in Priniski et al. is merely a high pass filter, not an antenna matching means. See for example column 2, lines 13 - 16: "High pass filter network 32 is a "T" type filter . . . ."

Priniski et al. states at column 2, lines 60 - 63: "Also, the component values of the low pass filter 14 and high pass filter 32 are selected whereby the impedance of the antenna is transformed to a proper value at the receiver input." Priniski et al. does not, however, teach or suggest a transceiver where the transmitter and receiver are actually directly connected, thereby requiring antenna matching for both the receiver and the transmitter.

In summary, the cited references considered either singularly or in combination do not teach or suggest the claimed invention. Accordingly, applicants respectfully submit that independent claim 20 and claims 21 - 31 depending on claim 20 are not obvious in view of Rucki et al. and Priniski et al.

Response to the Rejection of Claims 16 and 18 Under 35 U.S.C.§ 103

Claims 16 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rucki et al. (US Patent No. 6,006,112) in view of Priniski et al. (US Patent No. 4,055,807) as applied to claims 1 - 15 and further in view of Lampen (US Patent No. 5,375,257).

Claims 16 and 18 depend on claim 13. For the reasons set forth above regarding the patentability of claim 13, applicants respectfully submit that claims 16 and 18 are patentable as well.

SUMMARY

In view of the above, applicants submit that claims 1 - 31 are in condition for allowance. Accordingly, applicants respectfully request that the application be passed to issue.

Attached hereto is a marked-up version of the changes made to the above-identified application by the current amendment. The attached page is captioned "**Version with markings to show changes made**."

Respectfully submitted,

CHRISTIE, PARKER & HALE, LLP

By _____
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626/795-9900

SDB/dlf

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please amend claims 1, 13, 20 and 21 as follows:

1. (Amended) A transceiver, comprising:

at least one capacitor, each capacitor comprising a first node and a second node;

a transmitter having an output to couple a transmission signal to an antenna, the transmitter output coupled to the first node of each of the at least one capacitor; and

a receiver having an input responsive to a receive signal from the antenna, the receiver input [being directly connected to the transmitter output] coupled to the second node of each of the at least one capacitor.

13. (Amended) A method of coupling a transceiver to an antenna, the transceiver having a transmitter output and a receiver input connected directly together, the method comprising:

disabling the receiver input by powering off at least a portion of the receiver;

transmitting a transmission signal from the transmitter output to the antenna with the receiver disabled;

disabling the transmitter by powering off at least a portion of the transmitter and enabling the receiver by powering on at least a portion of the receiver; and

receiving a receive signal from the antenna at the receiver with the transmitter disabled.

20. (Amended) A transceiver, comprising:

a transmitter having an output to couple a transmission signal to an antenna;

a receiver having an input responsive to a receive signal from the antenna, the receiver input being directly connected to the transmitter output; and

matching means for matching impedance of the connected transmitter output and receiver input to impedance of the antenna.

21. (Amended) The transceiver of claim 20 wherein the transmitter further comprises means for disabling the transmitter output when the receiver input is responsive to the receive signal from the antenna, and the receiver further comprises means for disabling the receiver input when the transmitter output is coupling the transmission signal to the antenna.

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